

THE FAUNA OF AN ISLAND IN THE CHILKA LAKE.

CONTENTS OF PART II.

1. Heteromera. By K. G. Blair.
2. Free-living Thysanura. By C. Dover.
3. Dragonflies. By F. C. Fraser and C. Dover.

THE HETEROMERA OF BARKUDA ISLAND.

By K. G. BLAIR, B.Sc., F.E.S.

(Published by permission of the Trustees of the British Museum.)

The outstanding feature with regard to the Heteromorous fauna of Barkuda Island¹ is the preponderance of S. Indian forms. A few species have a wider distribution in India and the East, but the majority of those here recorded are known only from the southern part of the peninsular and from Ceylon. The most notable exceptions are: *Allecula humeralis*, sp. nov., of which the British Museum possesses two specimens, one each from Assam and Siam; but it may prove to be that this species occurs much more widely though rarely in India; and *Artactes gravelyi*, sp. nov., belonging to a genus of essentially more eastern distribution.

One species, *Gonocephalum lewisi*, sp. nov., is known hitherto from Ceylon only, but further collecting will probably prove its occurrence more generally in S. India.

Family TENEBRIONIDAE.

Hyperops latus Kraatz.

Kraatz, *Revis. Tenebrion.*, 1865, p. 235.

1 ex., 3.vi.20, 'under stones and dry leaves'; 2 ex., 15-22.vii.16 (*F. H. Gravelly*); 3 ex., 18.viii.20 'at foot of *nim* tree and on dry bark of same'; 4 ex., 16-20.ix.19 (*E. Brunetti*).

Described from 'India orientali' the species is represented in the British Museum by specimens from Ceylon, the Nilgiri Hills, Malabar and Madras.

Stenosis kraatzii Reitt.

Reitter, *Deutsch. Ent. Zeits.* XXX, 1886, p. 102.

7 ex., 15-22.vii.16 (*F. H. Gravelly*); 1 ex., 13-18.iv.20 (*N. Annandale*).

Described from 'India Or.'

¹ The first instalment of papers on the fauna of this island appeared in vol. xxii, of the *Records*, pp. 313-421 (1921).

***Pseudoblaps barkudensis*, sp. nov.**

Oblong, rather strongly convex, black, moderately nitid, with the antennae and legs piceous. Head densely and strongly punctured, moderately convex between the eyes, with a deep sulcus bordering the latter; clypeal suture obsolete, marked only by a feeble depression. Antennae extending slightly beyond middle of thorax, with a fine golden pubescence, 3rd joint about twice as long as wide, scarcely longer than the 4th, the rest successively shorter and wider, 10th twice as wide as long. Thorax transverse, widest in the middle, the sides arcuate, the base scarcely wider than the apex, all angles subrectangular, lateral margins rather wide and thickened, anterior margin fine and widely interrupted in the middle; disc evenly convex, strongly punctured throughout. Elytra less than $1\frac{1}{2}$ times as long as together wide, widest behind the middle, shoulders rounded, with the lateral carina prominent near the base but soon concealed (viewed from above) by the convexity of the outer interstices; striae impressed with rather large punctures not very closely placed, intervals convex, rather finely punctate; the striae combine towards the apex as follows: 4th and 5th, 3rd and 6th, 2nd and 7th, 1st and 9th, the 8th ending about the level of the 4th and 5th. Length 11 mm.

5 ex., 15-22·vii·16; 4 ex., 3-19·viii·19; 1 ex., 4-19·x·19 (*F. H. Gravely*).

All the specimens appear to be female. The species resembles *P. javanus* Wied., but is smaller, more nitid and more convex, with the striae uniting differently towards the apex.

***Pachypterus indicus*, sp. nov. (*F. Bates, M.S.*)**

Elongate, oblong, piceous brown, clothed above with moderately long sub-erect hairs the surface usually concealed with an earthy indument. Head short, transverse, strongly declivous and scarcely visible when the insect is viewed from above; eyes transversely oval, almost divided by the canthus; antennae slender, scarcely thickened towards apex, and reaching almost to the base of the thorax. Thorax feebly transverse, widest in front of the middle, the sides rounded and finely denticulate, anterior angles rectangular, posterior angles obtuse but distinct; disc convex, densely rugose punctate with feebly developed setigerous tubercles. Elytra elongate ovate, scarcely as wide as the thorax, becoming feebly wider from the base to behind the middle, the shoulders obtuse; striae moderately distinct, intervals feebly convex, set with setigerous granules throughout; epipleura suddenly reduced just beyond base of last ventral segment. Femora rather thick, clavate densely rugose-punctate, tibiae slender, feebly sinuate, with the inner apical angle produced, anterior tibiae not carinate along outer side, the exterior apical angle acute but scarcely produced.

The male has the first three joints of the anterior tarsi feebly

expanded, and a shallow but marked median depression on the first three abdominal segments. Length $8\frac{1}{2}$ –10 mm.

1 ex., 15·22·vii·16 and 6 ex., 25·vii–4·viii·17 (*F. H. Gravely*).

This species is represented in the British Museum by specimens from 'Bengale' from the Bates' collection which bear the MS. name I have adopted, and by two labelled 'Berhampur' from the Atkinson collection. A specimen from the Bates' collection is taken as the type.

The species is intermediate in many respects between *P. elongatus* Muls., and *Amblysphagus pachyderus* Fairm., the thorax not having the sharp granules of the former, with the sides much more finely crenulate, while the latter has the sides of the thorax entire and the posterior angles rounded. It is doubtful whether *Amblysphagus* Fairm., can stand as a distinct genus.

Mesomorphus villiger Blanch.

Blanchard, *Voy. Pole Sud*. IV, 1853, p. 154, pl. 10, fig. 15.

2 ex., 17·x·20, 'at light' (*N. Annandale*).

Widely distributed in the tropics of Asia and recorded also from tropical Africa.

Mesomorphus rugulosus Chat.

Chatanay, *Bull. Paris. Mus.* 1917, 4, p. 6.

2 ex., 15·22·vii·16 (*F. H. Gravely*); 3 ex., 25·vii–4·viii·17 (*N. Annandale*); 5 ex., 3–19·viii·19 (*F. H. Gravely*); 3 ex., 13·ix·20, 'with termites' (*N. Annandale*); 2 ex., 4–19·x·19 (*F. H. Gravely*).

Further specimens have been received from the Kheri Forest, U.P., India, on 'Sal,' *Shorea robusta* (*H. G. Champion*) and from Java. The species was described from Indo-China and Burma, so that it appears to be rather widely distributed in tropical Asia.

Anemia coriaria Fairm.

Fairmaire, *Ann. Soc. Ent. Belg.* XL., 1896, p. 21.

3 ex., 27·x·20, 'at light' (*N. Annandale*).

Described from S. India the species is said to extend as far as Assam and Tibet. It is also found in Ceylon.

Gonocephalum strigatum F.

Fabricius, *Ent. Syst. Suppl.* 1798, p. 41.

2 ex., 15·22·vii·16 (*F. H. Gravely*); 5 ex., 27·x·20, 'at light' (*N. Annandale*).

Common in S. India and Ceylon.

Gonocephalum lewisi, sp. nov.

Small, oblong, piceous or reddish piceous with the antennae and tarsi ferruginous, usually covered with an earthy indument con-

cealing the sculpture. Head transverse, moderately flat, with prominent ridges overhanging the inner margin of the eyes, canthus wider than the eyes, its anterior border sinuate, the ends of the clypeal suture angularly emarginate. Antennae rather slender, the last four joints enlarged to form a well marked though loose club. Thorax rather strongly convex with well defined expanded margins of fairly even width and rather wider than the canthus; the disc, when cleaned, is fairly smooth and shining, rather sparsely set with well-developed setigerous granules; the sides are rounded, straight or very feebly sinuate before the posterior angles, which are sharp and a little less than a right angle; the anterior angles are acute and forwardly prominent. Elytra as wide as thorax at base, thence becoming slightly wider to behind the middle, humeri obtuse but almost rectangular, the lateral carina visible from above till well behind the middle; the striae are set with coarse deep punctures, the intervals being convex, scarcely wider than the striae, smooth, with minute setigerous granules two or three deep across each. Legs moderately stout, anterior tibiae feebly arcuate, gradually expanded from base to apex, the outer side finely denticulate, the external apical angle acute, reaching almost to the apex of the 4th tarsal joint. Length 5-6 mm.

4 ex., 27·x·20, 'at light' (N. Annandale).

Also Ceylon, Colombo (G. Lewis), 1884 (types).

Closely allied to *G. strigatum* F., which it resembles in the structure of its legs and antennae, it is at once distinguished by the setigerous granules of the elytral intervals forming two or more series throughout; in *G. strigatum* they are mainly uniseriate.

Gonocephalum planatum Walk.

Walker, *Ann. Mag. Nat. Hist.* (3) 11, 1858, p. 284.

1 ex., Sept. 19 (N. Annandale).

Described from Ceylon, this species has a wide range in India and the Malay region.

Gonocephalum sp.

1 ex., 27·x·20, 'at light' (N. Annandale).

Gonocephalum depressum F.

Fabricius, *Ent. Syst. Suppl.*, 1798, p. 41.

2 ex., 15-22·vii·16, and 19 ex., 25·vii-4·viii·17 (F. H. Gravely).
A common species throughout India.

Caedius malabaricus Fairm.

Fairmaire, *Ann. Soc. Ent. Belg.* XXXVIII, 1894, p. 22.

1 ex., 3·vi·20, 'under stone and dry leaves'; 1 ex., 16-20·ix·19 (E. Brunetti); 2 ex., 27·x·20, 'at light' (N. Annandale).

This species occurs also in Ceylon and in Tenasserim.

Leichenum canaliculatum F.

Fabricius, *Ent. Syst. Suppl.*, 1798, p. 42.

1 ex., 3-19.viii.19 (*F. H. Gravely*).

Occurs in S. India and Ceylon.

Byrsax cornutus F.

Fabricius, *Ent. Syst.* 1, 1792, p. 88.

B. horridus, Walk., *nec* Oliv.

15 ex., 15-22.viii.16 (*F. H. Gravely*).

Also found in Ceylon and S. India.

Platydemia velutinum Walk.

Walker, *Ann. Mag. Nat. Hist.* (3) 11, 1858, p. 283.

16 ex., 15-22.vii.16 (*F. H. Gravely*).

Described from Ceylon; the British Museum possesses besides a series from the Andaman Islands, but no specimens from the mainland of India.

Alphitobius laevigatus F.

Spéc. Ins. 1, 1787, p. 90.

1 ex., June 1920 (*N. Annandale*).

A cosmopolitan species more generally known as *A. piceus* Ol.

Setenis furva Gebien.

Gebien, *Entom. Mitteil.* VIII, 1919, p. 11, pl. i, f. 9.

22 ex., 15-22.vii.16 (*F. H. Gravely*).

Ceylon and S. India.

Derosphaerus cancellatus Fairm.

Fairmaire, *Ann. Soc. Ent. Belg.* XL, 1896, p. 27.

1 ex., 3-19.viii.19, and 1 ex., 4-19.x.19 (*F. H. Gravely*).
S. India.

Anthracias curvicorne Chevr.

Chevrolat, in Guér. *Icon. Règne Anim.*, 1844, p. 119, pl. 30, fig. 6 a-c
(= *Toxicum oppugnans* Walk.)

7 ex., 15-22.vii.16 (*F. H. Gravely*).

Ceylon and S. India.

Lyprops curticolis Fairm.

Fairmaire, *Ann. Soc. Ent. Belg.* XL, 1896, p. 28.

62 ex., June 1920 (*N. Annandale*); 1 ex., 3.vi.20, 'under stone and dry leaves'; 13 ex., 15-22.vii.16; 3 ex., 3-19.vii.19 (*F. H. Gravely*); 3 ex., 19.viii.20, 'at base of tree under earth' (*C. Dover* and *S. Ribeiro*); 2 ex., 16-20.ix.19 (*E. Brunetti*); 3 ex., 27.x.20, 'at light' (*N. Annandale*); 8 ex., vii.14 (Chilka Survey).

Ceylon and S. India.

"This is by far the commonest beetle on the island. In the rainy season it is to be found literally in thousands under stones and particularly behind pictures, under articles of furniture, and in dark corners in the bungalow. In winter a few individuals can always be discovered under stones. It is the species I have referred to (*Rec. Ind. Mus.* XXII, p. 318) as being mutilated by the ant *Phidole rhombinoda* and stored by it as provender in a limbless but living condition." [N. Annandale.]

Artactes gravelyi, sp. nov.

Shortly oblong, nitid, black, with the elytra metallic and iridescent. Head and thorax finely, not very closely, punctate, the latter about twice as wide at the base as at the apex, the median part of the base projecting considerably behind the basal angles, the sides with a strong marginal sulcus continued as a fine line along the anterior margin. Elytra striate-punctate, the punctures somewhat irregular in size, not very closely placed, and the intervals flat; shoulders rounded, the lateral carina strongly prominent almost to apex; colour shining black with a faint aeneous tinge, with a patch formed of concentric iridescent bands behind the shoulders, and another externally at the apex; these bands of colour have a connecting strip of the same along the 6th interval leaving an external lateral patch blackish. Underside black, antennae, palpi and tarsi reddish. Length 8 mm.

1 ex., 15-22.vii.16 (F. H. Gravely).

This is of interest as being the first species of *Artactes* to be recorded from India proper, the genus being essentially Indo-Malayan. *A. gravelyi* is at once distinguished by its black head and thorax and comparatively sombre colouration.

Camarimena renardii Fairm.

Fairmaire, *Ann. Soc. Ent. Belg.* XXXVIII, 1894, p. 25.

4 ex., 15-22.vii.16 (F. H. Gravely).

This insect, with which Fairmaire's description agrees tolerably well, is allied to *C. rugosistriata* mihi, but more elongate, the thorax less markedly narrower than the elytra, the striae of the latter more even, the punctures regularly crenulating the intervals; the femora much more strongly clavate, etc.

C. renardii was described from Konbir, Chota Nagpur.

Hoplobrachium dentipes F.

Fabricius, *Spec. Ins.* I, 1787, p. 326.

Helops ebeninus Walk.

Hoplobrachium asperipenne Fairm.

1 ex., 15-22.vii.16 and 1 ex., 3-10.viii.19 (F. H. Gravely).

Described originally as '*Helops dentipes*' from Coromandel, later as *Helops ebeninus* Walk., from Ceylon, this species appears

to be identical with *Hoplobrachium asperipenne* Fairm., from Madagascar. The British Museum possesses a considerable number from Ceylon and Southern India, and it is probable that the Madagascar record is erroneous or accidental. An old specimen in the Museum purporting to come from Mauritius is noted as of doubtful locality, some of the insects to which its Register No. applies being S. African species, while others are from Ceylon.

***Strongylium annandalei* sp. nov.**

Subopaque, black. Head and thorax coarsely and densely punctate, eyes moderately approximate, separated by a space about equal to the length of the third joint of the antennae. These entirely black, 3rd joint equal to 4th, and equal to 1st and 2nd together, joints 5 to 11 a little shorter and thicker, with larger punctures and more opaque. Thorax as wide as head, feebly transverse, anterior margin straight, the border scarcely thickened in the middle, lateral margins rounded in the middle, slightly sinuate towards base and apex, carinate throughout, anterior angles rounded, posterior angles acute. Elytra wider than thorax, parallel, shoulders rounded, lateral carina invisible from above; striae with large deep squarish punctures, each of which has a small tubercle in the middle of each side, intervals convex, subopaque, with fine scattered punctures. Underside more nitid but strongly punctate throughout, prosternum with a conical projection behind the coxae, last segment of abdomen (σ) with a feeble median depression, subtruncate at apex. Legs moderately nitid, densely punctate, anterior femora somewhat thickened about middle, all tibiae slender, feebly sinuate within, tarsi slender, clothed beneath with yellow hairs, claw-joint of anterior tarsi slightly longer, that of posterior tarsi slightly shorter than the rest together. Length 12-14 mm.

2 ex., 25·vii-4·viii·17 (*N. Annandale*); 1 ex., 15-22·vii·16 (*F. H. Gravely*), also 1 S. India and Ceylon in Brit. Mus. (type).

Probably allied to *S. marseuli* Lew., from Japan, but more cylindrical in form, with the antennae and legs less slender, the elytral intervals convex, not carinate, etc. Similar punctures in the elytral striae are also found in certain W. African species, e.g. *S. borchmanni* Geb., *Arch. f. Naturgesch.*, 1920 (1921), Abt. A, 6 Heft, p. 174, fig.

Family CISTELIDAE.

***Allecula humeralis*, sp. nov.**

Elongate, black, subopaque, with the legs and underside piceous. Head densely, rather finely, punctate, eyes separated by a space equal to the width of one of them, bordered internally by a slight furrow which is not produced downwards towards the clypeus. Antennae slender, joints 3-11 subequal, 5th to 10th slightly thickened within towards apex. Thorax feebly transverse, slightly

rounded at sides base and apex bisinuate, all angles obtuse, sub-rectangular; disc evenly convex, rather strongly but irregularly and not densely punctate. Elytra attenuate in posterior third, strongly punctate-striate, intervals convex, lateral carina at extreme base visible from above forming a rounded prominence in front of the humeral callus. Underside more nitid, epimera of prothorax densely and coarsely punctured towards sides leaving a shining smooth place above coxae, meso- and metasterna also coarsely but less densely punctured towards sides, abdomen and median part of thorax densely and finely punctured and pubescent. Femora densely and finely punctured and pubescent, slightly thickened beyond middle, tibiae more coarsely and less densely punctured.

Male with a tooth on anterior tibiae within at about $\frac{1}{3}$ from base, slightly emarginate beyond this to apex. Length 12-14 mm.

1 ex., ♀, Oct. 1919 (*N. Annandale*); also 1 ♀ Assam, Patkai Mts. (*Doherty*); 1 ♂, Siam, Xieng Khong (*R. V. de Salazar*) (type).

Allied to *A. sericans* Fairm., from the Philippine Is. and when viewed obliquely from in front exhibiting a greyish sericeous sheen on the elytra much less pronounced than in *A. sericans*. In the latter species the marginal sulci of the eyes are produced downwards, the lateral carina of the elytra is not prominent in front of the shoulder and the prothoracic epimera are impunctate.

Family ANTHICIDAE.

Anthicus floralis var. *quisquilius* Thoms.

Thomson, *Skand. Col.* VI, 4864, p. 380.

1 ex., 3-19.viii.19 (*F. H. Gravely*).

A common species of practically cosmopolitan distribution.

Family MORDELLIDAE.

Mordellistena daturae, sp. nov.

Elongate, narrow, testaceous, clothed with a moderately dense pubescence of the same colour. Antennae slender, 3rd and 4th joints shorter than 2nd; together as long as 4th, 4th to 11th equal in length, slightly expanded and rounded on inner side. Posterior angles of pronotum distinctly rounded. Pygidium slender, twice as long as hypopygium. Posterior tibiae with three strongly oblique comb-ridges, extending nearly half way across the outer side of the tibia, 1st tarsal joint with three shorter oblique ridges, 2nd with two, 3rd without ridges. The inner spur of the posterior tibiae is nearly as long as the 1st tarsal joint, about 4 times as long as the outer spur. Length (including pygidium) 3 mm.

2 ex., 3-19.viii.19, 'from *Datura* flowers' (*F. H. Gravely*); 1 ex., 25.vii-4.viii.17 (*N. Annandale*).

From *M. defectiva* Walk., from Ceylon it differs in its rather smaller size and paler colour, in the posterior angles of the pron-

otum being distinctly rounded instead of subrectangular, in the length of the tibial spurs of the posterior pair of legs, and in the number of oblique ridges on the posterior tibiae and tarsi. In *M. defectiva* there are 5 of these ridges on the tibiae and 4, 3, and 2, respectively, on the first three tarsal joints; while the inner tibial spur is only about half as long as the 1st tarsal joint and about twice as long as the outer spur.

Family MELOIDAE.

Mylabris pustulata Thunb.

Thunberg, *Dissert. Nov. Ins. Spec.*, VI, 1791, p. 113, fig. 13.

M. humeralis Walk

3 ex., 13-18.iv.14 (*N. Annandale*); 1 ex., 3-19.viii.19 (*F. H. Gravely*); 2 ex., 17.ix.19 (*E. Brunetti*); 1 ex., Oct. 1920 (*N. Annandale*); 9 ex., 25.vii-4.viii.17 (*N. Annandale*).

A common species in S. India and Ceylon.

Sybaris testaceus F.

Fabricius, *Ent. Syst.* I, 2, 1792, p. 85.

1 ex., 16.ix.19 (*E. Brunetti*).

Borchmann, in Junk's *Coleopt. Catal.* pars 69, 1917, retains this species in *Lytta*, but it and the closely allied *L. nigrifinis* Walk. (= *L. usta* Fairm.) both have the upper branch of the claws pectinate, and must be removed to *Sybaris*.